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"पुराने को छोड नये के तरफ"
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IS 5135-1 (1994): Hand-Rotary Duster, Part 1: Belly-Mounted Type [FAD 21: Farm Implements and Machinery]

"ज्ञान से एक नये भारत का निर्माण"
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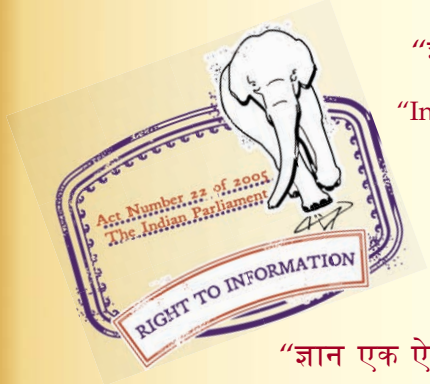

"ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है"
Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

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भारतीय मानक

हस्तचालित भुरकाव यन्त्र

भाग 1 पेट पर रखा जाने वाला

(दूसरा पुनरीक्षण)

Indian Standard

SPECIFICATION FOR HAND-ROTARY DUSTER

PART 1 BELLY-MOUNTED TYPE

(Second Revision)

UDC 631·348·46

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110 002

October 1994

Price Group 2

AMENDMENT NO. 1 NOVEMBER 1997
TO
IS 5135 (Part 1) : 1994 SPECIFICATION FOR HAND-ROTARY DUSTER
PART 1 BELLY-MOUNTED TYPE

(Second Revision)

(*Page* 3, *clause* 7.4) — Substitute the following for the existing clause:

'7.4 When tested in accordance with the method given in 5.4 of IS 12482 : 1988, no leakage of dust shall occur:

a) at any place if suction pipe is provided, or

b) at the joint of casing and its cover if no suction pipe is provided.'

(FAD 59)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 2 AUGUST 2000
TO
IS 5135 (PART 1) : 1994 SPECIFICATION FOR HAND ROTARY DUSTER

PART 1 BELLY-MOUNTED TYPE

(Second Revision)

[*Page* 2, *Table* 1, *Sl No* (vii), *col* 3] — Substitute the following for the existing materials.

'Steel/Aluminium alloys/ Engineering Palstics/ Brass'

(FAD 59)

Reprography Unit, BIS, New Delhi, India

Crop Protection Equipment Sectional Committee, FAD 25

FOREWORD

This Indian Standard (Second Revision) was adopted by Bureau of Indian Standards after the draft finalized by the Crop Protection Equipment Sectional Committee, had been approved by Food and Agriculture Division Council.

This Standard was first published in 1969 and revised in 1974. A revision of the standard has been taken up to incorporate certain improvements found necessary in the light of the modifications suggested by the testing authorities and the manufacturers. The figures given in the standard are meant only for illustration. These should not be considered as suggestive of any standard design.

Hand rotary dusters on the basis of their mounting are mainly of two types: (a) belly-mounted, and (b) shoulder-mounted. This part (Part 1) covers the requirements of belly-mounted type dusters while Part 2 covers shoulder mounted type dusters.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SPECIFICATION FOR HAND-ROTARY DUSTER

PART 1 BELLY-MOUNTED TYPE

(Second Revision)

1 SCOPE

1.1 This standard (Part 1) prescribes material, performance, and other requirements of hand-rotary duster, belly-mounted type used for dusting pesticides in powder form.

2 REFERENCES

The following Indian standards are necessary adjuncts to this standard :

IS No.	*Title*
7201 (Part 1) : 1987	Methods of sampling for agricultural machinery and equipment : Part 1 Hand tools and hand operated /animal-drawn equipment
8480 : 1977	Glossary of terms relating to crop protection equipment
12482 : 1988	Methods of test for manually operated dusters

3 TERMINOLOGY

3.0 For the purpose of this standard, the following definitions in addition to those given in IS 8480 : 1977 shall apply (*see also* Fig. 1).

3.1 Agitator

A device which mechanically initiates the movement of the dust within the hopper (*see* 3.9).

3.2 Rest Plate

A component to rest the duster comfortably on the chest or belly of the operator.

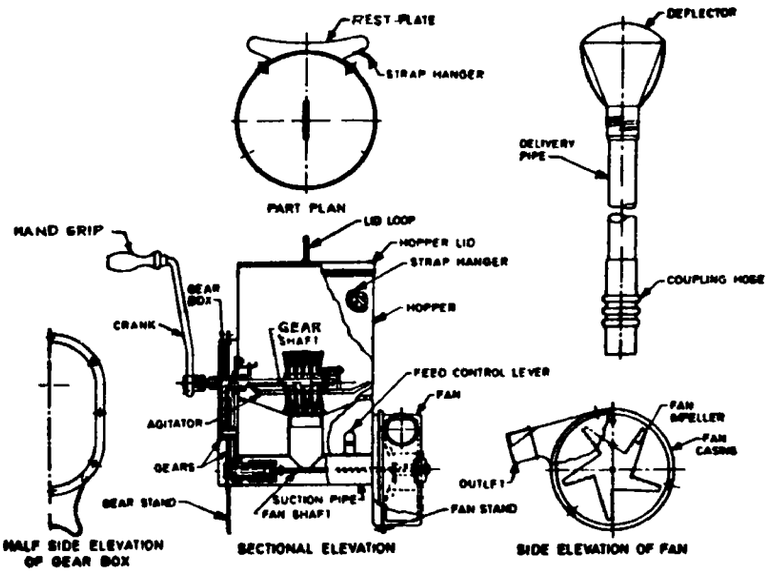

FIG. 1 A TYPICAL HAND ROTARY DUSTER, BELLY-MOUNTED TPYE

3.3 Casing

The stationary part of the fan (*see* 3.6) which guides air to and from the impeller outlet.

3.4 Crank

A component to help in rotating the gear train.

3.5 Dust Deflector

A component to direct the powder towards the traget.

3.6 Fan

A rotary device which propels air continuously.

3.7 Feed Control

A device to control the feed of the powder.

3.8 Feeder

A device to feed the powder to the aperture.

3.9 Hopper

A container for holding the dust

3.10 Impeller

The part of the fan (*see* 3.6) which imparts movement to the air by virtue of rotation.

3.11 Suction Pipe

The pipe through which the fan sucks the dust.

3.12 Total Mass

The mass of the duster with all its mountings and attachments but without any dust in hopper.

4 MATERIALS

4.1 The material of construction of various components of the duster shall be selected from col 3 of Table 1. The material should, conform to the relevant Indian Standard. Some of the relevant Indian Standards are given in Annex A for guidance.

4.2 All the metallic parts coming in contact with the pesticide should preferably be of the same material to minimize electrolytic deterioration.

4.3 The material used for different components shall be declared by the manufacturer in the manual (*see* 5.14).

5 CONSTRUCTIONAL REQUIREMENTS

5.1 Hopper

The hopper shall have a concave shaped or conical bottom so that the dust contained in it moves towards the feeding aperture. On top of the hopper, a filler hole of at least 130 mm in diameter shall be provided. The hole shall be covered with a lid. On the centre of the lid, a loop or other arrangement shall be provided to lift the lid An easily operating locking device may be provided to hold the lid securely in place during operation.

Table 1 Materials of Construction of Various Component

(*Clause* 4.1)

Sl No. (1)	Component (2)	Material (3)
i)	Hopper	Aluminium alloy/Engg Plastic
ii)	Hopper lid	Same as for (i)
iii)	Lid loop	Steel/Galvanized steel/Aluminium alloy/Engg Plastic
iv)	Rest plate	Steel/Engg Plastic
v)	Gear housing	Cast iron/Galvanized steel/Aluminium alloy/Engg Plastic
vi)	Gear	Steel/Bronze/Gun metal/Nylon
vii)	Agitator	Steel/Aluminium alloy/Engg Plastic
viii)	Gear shaft	Steel
ix)	Crank	do
x)	Fan shaft	do
xi)	Feed control lever	Galvanized steel/Brass
xii)	Handle grip	Wood/Engg Plastic
xiii)	Fan casing	Galvanized steel/Aluminium alloy/Engg Plastic
xiv)	Fan impeller	-do-
xv)	Gear stand	Galvanized steel/Aluminium alloy/Steel
xvi)	Fan stand	do-
xvii)	Coupling hose	Braided rubber/Engg Plastic
xviii)	Strap	Woven web cotton/Synthetic yarn
xix)	Gasket	Synthetic rubber Fibre/PVC
xx)	Hose clamp	Steel/Galvanized steel
xxi)	Cushion	Foam rubber/Foam plastic
xxii)	Delivery pipe	Engg Plastic
xxiii)	Dust deflector	do-
xxiv)	Hopper casing	G P Steel/Steel/Aluminium alloy

5.2 Feed Control Device

A feed control device with locking arrangement shall be provided to control the flow of dust through the aperture. The mechanism shall be controlled by a lever from outside of the hopper and shall not require any tool for the operation. Provision of an index pointer with marking for the aperture opening of hopper at positions closed 1/4, 1/2, 3/4 and full shall be provided.

5.3 Agitator

An agitator shall be incorporated within the hopper to keep the dust agitated and to avoid the clogging of the aperture and for feeding the dust to the aperture.

5.3.1 The agitator shall withstand the test prescribed in **6.1** of IS 12482 : 1988.

5.4 Gear Box and Gears

The gear box shall be so designed as to allow easy access to gears. A suitable gasket may be provided to make the housing dust-proof. A stand may be provided at bottom of the box to prevent its denting. The gears shall mate correctly and shall move smoothly.

5.5 Crank

A crank shall be fitted with the gear shaft which should function in a clockwise motion. The crank shall be fitted with a hand grip of sufficient size. The hand grip shall be in easy reach of the operator.

5.6 Rest Plate

A rest plate shall be fitted on the duster.

5.7 Fan

The fan impeller shall be covered with a leak-proof fan casing. A gasket may be used to make the casing leak-proof. The fan impeller shall be statically balanced. A stand may be provided at the bottom of the casing.

5.8 Coupling Hose

A flexible coupling hose shall be provided to connect the fan casing outlet with the delivery pipe in case delivery pipe itself is non-flexible. It shall be connected with fan casing outlet and the delivery pipe with hose clips.

5.9 Delivery Pipe

It may be flexible or rigid type. If of flexible type, it shall be directly connected through hose clip with fan casing outlet. If of rigid type, it shall be connected with coupling hose. The delivery pipe may be either in a single piece or in two pieces.

5.10 Deflector

A dust deflector integral with the delivery pipe or permanently fixed or tightly fitted with the delivery pipe shall be provided.

5.11 Straps

Two straps of suitable length and of 3.8 cm minimum width shall be provided in order to help easy carriage of the duster. The provision for easy adjustment of the length of each strap shall be provided. At the option of the purchaser a cushion of minimum of 4 cm wide and 2 cm thickness shall be provided with each strap at least on that portion which rests on the shoulder of the operator. The cushion, if provided, shall be covered with cotton, canvas, rexin, PVC or plastic-coated fabrics.

5.11.1 The straps and their assembly shall withstand the test prescribed in **6.3** of IS 12482 : 1988.

5.12 Bearing

The gear shaft and fan shaft shall be provided with bush bearings and shall be dust-proof.

5.13 Total Mass

The total mass of the duster shall not exceed 6 kg.

5.14 Manual

The manual shall include technical specifications of the duster, material of construction of various components shown in the exploded view of the duster, instruction for operations and maintenance, common faults and their remedies and safety precautions.

6 CAPACITY

6.1 The total capacity of the hopper shall be from 0.004 to 0.006 m^3. The capacity shall be declared by the manufacturer. The tolerance on the declared capacity shall be $\pm$ 5 percent.

7 PERFORMANCE REQUIREMENTS

7.1 The fan shall be able to deliver not less than 0.3 m^3 of air per minute when tested in accordance with the method given in **5.1** of IS 12482 : 1988.

7.2 Dust delivery rate shall be adjustable. Dust delivery shall be continuous. The delivery rate at maximum discharge setting shall be not less than 150 g per minute when tested in accordance with method given in **5.2** of IS 12482 : 1988.

7.3 When tested in accordance with method given in **5.3** of IS 12482 : 1988, the duster shall be able to throw the dust up to a minimum distance of one metre.

7.4 When tested in accordance with method given in **5.4** of IS 12482 : 1988, no leakage of dust shall occur at any point in duster.

8 WORKMANSHIP AND FINISH

8.1 The components of the duster shall have a smooth finish and shall be free from pits, burrs,

shrap edges and other defects that may be detrimental for their use.

8.2 The exposed metallic parts shall have a protective coating to prevent surface deterioration. Steel used for the components coming in contact with the pesticides shall be plated with cadmium, zinc or nickel.

9 MARKING AND PACKING

9.1 Marking

Each duster shall be marked with the following particulars:

a) Manufacturer's name or recognized trademark, if any;
b) Batch and code number; and
c) Hopper nominal capacity.

9.2 BIS Certification Marking

The product may also be marked with the Standard Mark.

9.2.1 The use of the Standard Mark is governed by the provisions of Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

9.3 Packing

Each duster shall be packed, as agreed to between the purchaser and the supplier, for safe handling in transit.

10 SAMPLING FOR LOT ACCEPTANCE

10.1 Unless otherwise agreed to between the purchaser and the supplier, sampling of the duster for lot acceptance shall be done in accordance with 3 of IS 7201 (Part 1) : 1987. The classification of different requirements of this specification for the purpose of lot acceptance is given below for guidance:

a) *Dimensional and Visual Requirements — see* **5** (except **5.3.1, 5.11.1, 5.13**) and **8.**

b) *Other than Visual and Dimensional Reqirements — see* **5.3.1, 5.11.1, 5.13, 6** and **7.**

ANNEX A

(*Clause* 4.1)

LIST OF RELEVANT INDIAN STANDARDS FOR MATERIALS OF CONSTRUCTION

IS No.	*Title*
28 : 1985	Phosphor bronze ingots and castings (*fourth revision*)
210 : 1978	Grey iron castings (*third revision*)
277 : 1992	Galvanized steel sheets (plain and corrugated) (*fifth revision*)
280 : 1978	Mild steel wire for general engineering purposes (*third revision*)
407 : 1981	Brass tubes for general purposes (*third revision*)
410 : 1977	Cold rolled brass sheet, strip and foil (*second revision*)
597 : 1978	Black plate and tinplate (pack rolled) (*second revision*)
617 : 1975	Aluminium and aluminium alloy ingots and castings for general engineering purposes (*second revision*)
733 : 1983	Wrought aluminium and aluminium alloys, bars, rods and sections (for general engineering purposes) (*third revision*)
737 : 1986	Wrought aluminium and aluminium alloys, sheet and strip (for genral engineering purposes) (*third revision*)
738 : 1977	Wrought aluminum and aluminium alloys, drawn tube (for general engineering purposes) (*second revision*)
739 : 1992	Wrought aluminium and aluminium alloys, wire (for general engineering purposes) (*third revision*)
1458 : 1965	Railway bronze ingots and castings (*revised*)
1993 : 1993	Cold-reduced tinplate and cold-reduced blackplate (*second revision*)
2062 : 1992	Steel for general structural purpose (*fifth revision*)
2954 : 1978	Vegetable tanned leather for belting (*first revision*)
4170 : 1967	Brass rods for general engineering purposes
4413 : 1981	Brass wire for general engineering purposes (*first revision*)
7608 : 1987	Phosphor bronze wires for general engineering purposes
7811 : 1985	Phosphor bronze rods and bars (*first revision*)
7814 : 1985	Phosphor bronze sheet and strip (*first revision*)

Bureau of Indian Standards

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such a review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards Monthly Addition'.

This Indian Standard has been developed from Doc : No. FAD 25 (317)

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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